V.E., FACDS, AND DESIGN CHARETTES

- **Communications**

  Direct communication with the LANTOPS Value Engineer is encouraged. If you have questions concerning Value Engineering, Function Analysis Concept Development (FACD), and design charette requirements, please contact him at (757) 322-4442 FAX 4415 or e-mail him at value@efdlant.navfac.navy.mil.

Value Engineering (VE)

- **Purpose**

  The purpose of VE is to maximize value by improving function and quality, while minimizing total life cycle cost. The Navy desires the most cost effective facility design, consistent with intended use, customer satisfaction and appropriate design. Participation by Users and the design team are welcome during all phases of LANTDIV VE efforts.

- **Definition**

  Value Engineering (synonymous with Value Analysis) is the systematic application of recognized techniques by a multi-disciplined team which identifies the functions of a product or project, establishes a worth for those functions, generates alternatives through the use of creative thinking, and provides the needed functions at the lowest overall cost.

- **Requirement for VE**

  The requirements for VE come from Public Law 104-106 (Section 4306), Office of Management and Budget Circular A-131 and NAVFACENGCOM VE Policy and Instruction. VE efforts are required on all projects with an estimated cost of construction (ECC) of at least $1M, unless the LANTDIV Value Engineer grants a waiver, based on NAVFACENGCOM guidance.

- **Types of VE Efforts**

  VE methods to be implemented on individual projects are determined by the LANTDIV Value Engineer, Project Manager and Engineer or Architect-in-Charge. Types of VE efforts used include VE studies and Function Analysis Concept Development (FACD) workshops.

- **Value Engineering Studies**

  VE studies are conducted by teams independent of the project design, usually through a LANTDIV indefinite quantity contract. Studies are conducted at the 35% or earlier stage of design. For the convenience of Users and for access to the project site by the VE team, most studies are conducted near the project site. Studies are of one-week duration and most include resolution of VE proposals in the same week as the study is conducted.

- ## VE Study Support by the Designer of Record

  Provide 1 copy of the latest project form DD1391 (or other project description), 7 copies of the design drawings, cost estimate and basis of design, one copy each of geotechnical reports, calculations, HVAC life cycle analysis, etc. which support the design and photographs of the site (or existing facility), if available. These shall be provided at least 2 weeks in advance of the study, direct to the VE firm.

  Provide a kickoff presentation at the beginning of the study which thoroughly describes the current design solution and participate in a site visit with the VE team.

  Support to the VE team during the study by responding to questions.

  Participate in the VE presentation and resolution meetings (usually on Thursday and Friday, respectively, of the study week) and provide a resolution report within two weeks of the study conclusion to all in attendance. The report shall include final resolution of all VE proposals, descriptions of modifications when proposals are accepted with modification, justification for rejected proposals and project cost consequences resulting from implemented proposals.

  The Design team are active participants on at least the first, fourth and fifth day of the VE study. Consequently, to minimize travel, if the site is not local to the design team, it may be convenient to schedule the design review meeting or other work, if applicable, to run concurrent with the VE study.

- ## Function Analysis Concept Development (FACD)

  FACD workshops are design charettes during which the conceptual design is created and which employ VE methodology. An outside team is not used in FACD efforts. For a complete description of FACDs, see the Function Analysis Concept Development section of this Guide.

Function Analysis Concept Development (FACD)

- ## General

  FACDs use Value Engineering techniques during design charettes to help develop conceptual designs which respond to project scope, budget and technical issues. FACDs allow an opportunity for Users to work closely with designers to improve understanding by all of project functional requirements and the related design and project issues. Unlike VE studies, FACDs do not employ an outside team of designers. The knowledge, experience and creativity of the Design Team are exercised to challenge and improve the initial conceptual design. When FACDs are conducted, other Value Engineering efforts at later stages of design are usually not required.

- ## Application

  In general, a Functional Analysis Concept Development (FACD) will be used on highly complex projects or projects over $5 mil ECC.

- ## Definition

  FACDs are cooperative efforts by the Design Team, User/Customer representatives, Engineering Field Division personnel, and other interested parties. FACDs include on-site development of a conceptual design in response to functional, aesthetic, environmental, base planning, site, budgetary and other requirements with consideration of life cycle consequences of alternative design solutions.

- ## Purposes of FACDs

  Confirm project scope and budget
  Expedite the design
  Improve the quality of design
  Improve understanding by all involved parties of project issues
  Early identification, tasking and resolution of project issues
  Achieve “best value” design
  Minimize redesign and associated expense
  Partnered buy-in of design solutions

- ## Preliminary Work

  Preliminary work includes a FACD kickoff meeting, obtaining and researching references and other documentation, performing site and condition surveys as required by the project, and developing a draft conceptual design and cost estimate. The draft conceptual design is to reflect the requirements of the project as described in the Designer's scope of work and is not required to be within the available funds.

- ## FACD Workshop

  For access to the project site and for the convenience of Users, FACD workshops are usually conducted near the project site. Typically, FACD workshops require 10 working days, with shorter workshops scheduled for smaller, less complex projects. When significant travel is involved and in order not to lose momentum, the workshop may be conducted without a weekend break. The workshop is an intense effort, with short turnaround times for alternative design solutions, often requiring longer than normal workdays. Adequate staffing of the on-site design team is essential and all disciplines involved in the design are represented.

- ## FACD Workshop Facilitator

  Facilitators may be provided by the government or by the Designer of Record. The Facilitator leads group discussions, helps promote creativity, keeps the workshop on track and assembles the FACD report. Facilitator requirements are:

  Value Engineering-trained (SAVE 40-hour workshop, minimum), CVS preferred
  Professionally registered
  Experienced in FACD-type efforts (participation in at least one prior FACD)
  Independent of the design team (third party) preferred

- ## Workshop Facilities

Most of the on-site work takes place in a large conference room, usually provided by the Facilitator or Designer, in which group meetings take place, and where the Design Team sets up a temporary office, including personal computers, printers/plotters, photocopy machine, overhead projector, etc. Voice telephone and facsimile facilities are provided convenient to the room.

- ## FACD Process

Early in the FACD workshop there is discussion of project functional requirements. Preliminary concepts are then presented, brainstormed, improved and re-presented several times. Issues are identified and resolved, or plans developed to resolve them. This process helps refine the project scope around User functional requirements and develops a conceptual design, which effectively responds to User functional requirements and other parameters of the project.

- ## Cost Estimating for FACD

Cost estimates to support FACD efforts may be generated by parametrics or by any relevant method in which the design team has confidence. The FACD report must present the design for a project which the Designer has confidence can be constructed within the available funds.

- ## FACD Report

The FACD report represents the final, confirmed project scope and the preliminary design, which will become the basis for later submittals. The report is developed entirely on-site, distributed and endorsed before the conclusion of the workshop. Content will vary somewhat, dependent upon particular project issues and requirements. It is important that the report completely cover the conceptual design, the alternatives considered, unique requirements of the project, outstanding issues and plans for their resolution. The report must be sufficiently detailed such that the Designer can proceed to the next phase of design quickly and present no surprises at the next design submission. Some of the typical report contents include:

Endorsements
Executive Summary
Workshop Agenda
DD1391
Conceptual Design Drawings
Abbreviated Basis of Design
Cost Estimate
Bid Additives or Options
Comments on the Conceptual Design (with Design Team responses)
Special Design/Cost Features
Base Master Plan Compatibility
Architectural Compatibility
Environmental Considerations
Site Approval Status
Construction/Contracting Issues and Suggestions
Permitting Issues and Status
Collateral Equipment
Outstanding Issues and Plan for Resolution
Alternative Design Proposals (Value Engineering-like format)
Function Listing

Function Analysis Systems Technique (FAST) Diagram
Relationship/Process and Information Bubble Diagrams
Creative Idea Listing
Meeting Records
Contact Directory

Design Charette

- ## General

On-site design charettes are conducted to develop conceptual designs that respond to project scope, budget and technical issues, primarily to respond to the User's functional requirements. Design charettes encourage interaction between Users and designers to improve understanding by all of project functional requirements and the related design and project issues. The knowledge, experience and creativity of the Design Team are exercised to challenge and improve the initial conceptual design.

- ## Application

Generally, design charettes will be used for moderately complex projects and/or projects with less than $5 mil ECC.

- ## Definition

Design charettes are cooperative efforts by the Design Team, User/Customer representatives, Engineering Field Division personnel, and other interested parties. They include on-site development of a conceptual design in response to functional, aesthetic, environmental, base planning, site, budgetary and other requirements.

- ## Purposes of Design Charettes

Confirm project scope and budget
Expedite the design
Improve the quality of design
Improve understanding by all involved parties of project issues
Early identification, tasking and resolution of project issues
Minimize redesign and associated expense
Partnered buy-in of design solutions

- ## Preliminary Work

Preliminary work includes obtaining and researching references and other documentation, performing site and condition surveys as required by the project, and developing a draft conceptual design. The draft conceptual design is to reflect the requirements of the project as described in the Designer's scope of work and is not required to be within the available funds.

- ## Design Charettes

For access to the project site and for the convenience of Users, design charettes are usually conducted near the project site. Typically, design charettes require 5 working days. The workshop is an intense effort, with short turnaround times for alternative design solutions, often requiring longer than normal workdays. Adequate staffing of the on-site design team is essential and all disciplines involved in the design are represented.

• Design Charette Facilitator

The Designer of Record should provide facilitators. The Facilitator leads group discussions, helps promote creativity, keeps the workshop on track and assembles the report. Facilitator requirements are:

- Professionally registered Designer or Project Manager
- Experience in at least one prior design charette session

• Workshop Facilities

Most of the on-site work takes place in a large conference room, usually provided by the Designer, in which group meetings take place, and where the Design Team sets up a temporary office, including personal computers, printers/plotters, photocopy machine, overhead projector, etc. Voice telephone and facsimile facilities are provided convenient to the room.

• Design Charette Process

The design charette session begin with discussions of project functional requirements. Preliminary concepts are then presented, brainstormed, improved and re-presented several times. Issues are identified and resolved, or plans developed to resolve them. This process helps refine the project scope around User functional requirements and develops a conceptual design, which effectively responds to User functional requirements and other parameters of the project.

• Cost Estimating for Design Charette

Cost estimates to support design charette sessions may be generated by parametric or by any relevant method in which the design team has confidence. The design Charette report must present the design for a project that the Designer has confidence can be constructed within the available funds.

• Design Charette Report

The design charette report represents the final, confirmed project scope and the preliminary design, which will become the basis for later submittals. The report is developed entirely on-site, distributed and endorsed before the conclusion of the session. Content will vary somewhat, dependent upon particular project issues and requirements. The report must be sufficiently detailed such that the Designer can proceed to the next phase of design quickly and present no surprises at the next design submission. Some of the typical report contents include:

- Endorsements

- Executive Summary
- DD1391
- Conceptual Design Drawings
- Abbreviated Basis of Design
- Budget Cost Estimate
- Outstanding Issues and Plan for Resolution
- Relationship/Process and Information Bubble Diagrams
- Contact Directory